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(54) IMPROVEMENTS IN CONTAINERS

(71) We, DR. KARL THOMAS GMBH, a German company, of Biberach an der Riss D-7950, Germany, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a non-rigid two-chamber container of flexible foil material for the administration of two single doses or two individual constituents, for example of medicinal liquids, and to a method of manufacturing such a container.

Single dose non rigid containers consisting of a chamber containing a substance have been proposed for instance in British Patent No. 1365848. In cases where two liquids which are incompatible with one another, but which have to be applied simultaneously or where two liquids are to be mixed with one another shortly before application, the use of two single dose containers which each consist of only one chamber and which contain one liquid or the other has proved disadvantageous because the packs can be confused very easily. Although this problem can be solved to a certain extent by applying strikingly different identification to the outside of the individual packs, this requires the preparation of two kinds of packs and, consequently, means higher costs and more spent on production.

Furthermore there are some areas of application in medicine which occur in pairs, for example the nostrils, the eyes and the ears. If known single dose containers are used, for such applications two single dose containers would be required for the administration of the medicament.

According to the invention there is provided a two chamber container of flexible foil material for the administration of two single doses or of two individual constituents, wherein said two chambers are connected

to a discharge passage each via a delivery passage, said discharge passage containing a flexible elongate closure member, one end of which closes the junction of the two delivery passages with the discharge passage and the other end of which is welded into a tear-off portion of the container.

Thus the closure member seals the discharge passage outwardly and the delivery passages of the two chambers are cut off from one another, so that premature mixing of the contents cannot take place. When a double-chamber single dose container of this kind is used, substances which are galenically incompatible with one another can be kept separate from one another without risk and not mixed with one another until shortly before application, e.g. at the place of application.

The use of such a double-chamber container instead of two single-dose containers eliminates any risk of confusion and entails a not inconsiderable saving of cost and materials; the user has only one pack to deal with, which is more convenient for him in every case.

Preferably, a container according to the invention consists of two malleable foils, for example two deep-drawable laminated aluminium foils, into which are impressed mirror-symmetrically two double-chamber halves, associated delivery passage halves communicating with respective discharge passage halves where the two delivery passage halves join together. After the two halves of the foil have been sealed together, the discharge passage is filled a closure member in the form of a thread. The latter may consist of plastics material (for example, Monofil) or plastics-coated textile material. One end of the thread shuts off the junction of the two delivery passages with the discharge passage and the other end is sealed directly in a tear-off tab.

The tear-off tab is formed from extensions

of the webs of foil and has a weakened rupture point at the transition to the container.

Advantageously, the thread may extend 5 beyond the junction of the two delivery passages, in order thereby to guarantee secure sealing of the two delivery passages from one another. In this manner, the two liquids in the two chambers cannot be mixed 10 with one another during storage or during transport; this is necessary, for example, when the two liquids react with one another or are galenically incompatible with one another in the long term.

The double-chamber container is opened 15 by twisting and/or pulling off the tear-off tab from the container, in order to remove the opening thread from the discharge passage and thereby free the opening. As a 20 result, the channel is open for the liquid to pass out of the chambers through the delivery passages and the discharge passage. The two chambers can be emptied simultaneously or successively by exerting pressure, for example, by means of the fingers. 25

The containers are manufactured by sealing two foil halves stamped to provide the above-mentioned chambers and passages. The half sections are impressed into endless foil strips and the foil strips whose impressions are mirror-symmetrical to one another are then secured to one another in a pre-sealing operation, the chambers and passages being sealed round first with the 35 exception of filling openings on the chambers. A previously stretched thread introduced into the discharge passage at the same station is simultaneously secured fast in the tear-off tab by pre-sealing jaws and 40 detached from the thread strand at a theoretical rupture point of the thread by pulling back the thread strand.

The two chambers are subsequently filled 45 by means of filling needles through the unsealed filling openings of the chambers and are hermetically closed at a final sealing station.

Accordingly the invention provides in a further aspect a method of manufacturing a 50 container as above set forth comprising providing two opposing foil sections, each foil section having impressed therein a predetermined shape so as in the assembled container to form two separate chambers 55 communicating with a discharge passage, sealing together said opposing foil sections in part whilst simultaneously positioning within said discharge passage an elongate flexible closure member, one end of said 60 closure member being positioned within extensions of said foil sections which form a tear off tab, and filling said chambers with the contents of the containers through the unsealed part of the containers, and finally 65 sealing the container.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings.

Figure 1 is a schematic view of the container according to the invention, and 70

Figure 2 is an enlarged fragmentary sectional view of the container.

Referring to the drawings, there is shown a container formed from two separate foil sections having two separate chambers 2, 2 75 each connected by a delivery passage 3 at a junction 4 to an elongate discharge passage 5. Sealed within the container is a flexible elongate closure member 6 in the form of a plastics thread. One end 7 of the thread 80 projects beyond the junction 4 and the other end 8 is secured by securing means 9 within a tear-off foil tab 10. Tab 10 has a narrowed region 11 at which the tab will tear away from the rest of the container. 85

The container 12 made of two foil sections is stamped out of an endless foil strip which are sealed together.

The method of filling the container is as follows. When the foil strips have been 90 joined together, they are left partly unsealed so that the intended contents may be introduced into the respective chambers 2 by means of a filling nozzle. The container is then fully sealed. To remove the contents 95 of the container, the tab 10 is torn off and the contents of the container are squeezed from the container by squeezing each chamber separately one after the other, or both simultaneously. 100

WHAT WE CLAIM IS:—

1. A two chamber container of flexible foil material for the administration of two single doses or of two individual constituents, wherein said two chambers are connected 105 to a discharge passage each via a delivery passage, said discharge passage containing a flexible elongate closure member, one end of which closes the junction of the two delivery passages with the discharge passage and the 110 other end of which is welded into a tear-off portion of the container.

2. A container as claimed in claim 1 wherein the container is formed of two opposing foil sections and said tear-off portion 115 is formed from extensions of said foil sections.

3. A container as claimed in claim 1 or 2 wherein the two chambers communicate with the discharge passage by means of delivery passages which join the discharge passage intermediate its ends, and wherein the closure member extends beyond the junction of said delivery passages with said discharge passage. 120 125

4. A container according to any one of the preceding claims wherein the closure member is in the form of a thread of plastics or plastics-coated textile fabric.

5. A two chamber container substan- 130

tially as described with reference to the accompanying drawings.

6. A method of manufacturing a container as claimed in any one of claims 1 to 5 comprising providing two opposing foil sections, each foil section having impressed therein a predetermined shape so as in the assembled container to form two separate chambers communicating with a discharge passage sealing together said opposing foil sections in part whilst simultaneously positioning within said discharge passage an elongate flexible closure member, one end

of said closure member being positioned within extensions of said foil sections which form a tear off tab, and filling said chambers with the contents of the container through the unsealed part of the containers, and finally sealing the container. 15

For the Applicant
FRANK B. DEHN & CO.,
Chartered Patent Agents,
Imperial House,
15-19, Kingsway,
London, WC2.

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FIG.1.

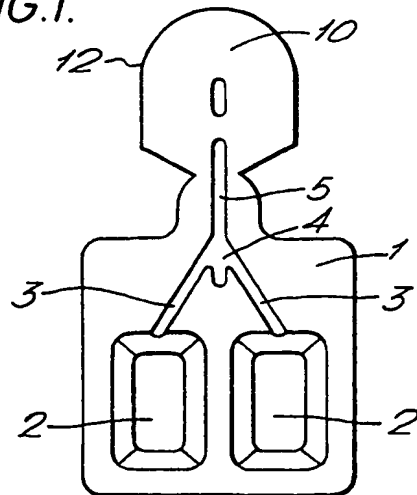


FIG.2.

